

## Reflective Insulation



**T**he reflective material pictured is NRC-2® Superinsulation, designed for superconducting magnets used in body-scanning magnetic resonance imaging (MRI) systems and in particle accelerators. Introduced in 1990, it is the latest in a long line of spinoff products manufactured by Metallized Products, Inc. (MPI), Winchester, Massachusetts.

NRC-2 is a thin film polyester film with a high purity aluminum deposit on one side for maximum reflectance in high vacuum applications. Used by two major producers in their manufacture of MRI equipment, the material is characterized by a unique crinkled surface that provides surface stand-off between layers and minimizes heat transfer in multilayer applications. A companion material, NRC-2/Two®,

*A COATING FOR INFLATABLE SATELLITES LED TO  
A FAMILY OF COMMERCIAL METALLIZED PRODUCTS*

is available for special applications requiring two-sided metallized film.

NRC-2 and scores of other metallized products trace their origins to the early years of the space program, when NASA was experimenting with large balloon-like satellites intended as orbital relay stations for reflecting — or “bouncing” — communications signals from one point on Earth to another. NASA needed a special kind of material for the balloon’s skin. It had to be highly reflective; it also had to be extraordinarily thin and lightweight, in order to be carried to space in a beach-ball-size canister, then inflated to a diameter roughly the height of a 10-story building. The answer proved to be a metallized material, a plastic film coated with a superfine mist of vacuum-vaporized aluminum to create a foil-like effect.

The balloon-satellite idea didn’t pan out and metallized plastics might have gone nowhere except that NASA discovered another, more important application for the metallized film: as a reflecting insulator, or thermal barrier, for protecting astronauts and sensitive space equipment from solar radiation and extremes of temperature. That discovery triggered an ever-increasing demand for metallized film in space applications and spurred development of a broad line of commercial metallized products.

MPI was one of the companies that worked with NASA on development of the original material. The company continues to supply metallized materials for a variety of space uses, but over three decades MPI has developed an even broader line of industrial and consumer-oriented metallized film, fabric, paper and foam. ●

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